



SOFTWARE

TURN YOUR PET INTO A TERMINAL WITH PTERM!

PTERM is a program that allows you to use your Commodore PET as a standard ASCII CRT terminal. The program is available in two versions: PTERM-232 works with either the TNW-232D or TNW-2000 RS-232 serial interface; PTERM-103 works with the TNW488/103 full service modem, and provides automatic dialing capability. Either version of the program will allow a user with a printer to have incoming data printed as well as displayed on the PET screen.

The main program loop is written in machine language so it can operate at 300 bits per second without dropping input characters. The BASIC portion of the program POKES the machine language code into memory and changes the PET's internal end-of-memory pointers appropriately. The program properly handles conversion between the PET and ASCII character sets for both new and old style PET's (minimum of 8K memory required). Since the PET does not have a control key, control characters are

transmitted by typing the REVERSE key and then the appropriate character. Similarly, type DOWN for linefeed, HOME for escape, and so forth. The user can also switch from full duplex to half duplex operation (or vice versa), and enable or disable output to a printer or disk.

PTERM-232: When used with the TNW-232D, PTERM-232 monitors Clear-to-Send (RS-232-pin 5) so that an attached modem can indicate the presence or absence of carrier. PTERM-232 cassette and documentation is priced at \$16.95.

PTERM-103: This version of PTERM takes advantage of the capabilities of the TNW488/103 modem to provide automatic dialing, allowing the user to enter a phone number or predefined code such as TELNET. In addition, the user can change the baud rate under program control. PTERM-103 is provided free of charge to purchasers of the TNW488/103. It is available to others for \$16.95.

PAN: AN ELECTRONIC MAIL SYSTEM!

PAN is an electronic mail program developed jointly by TNW Corporation and the San Francisco Bay Area based PCNET Committee.

PAN manages a buffer area containing text messages, and handles the transmission and reception of messages over the telephone system. System commands include Enter (a new message using the PET screen editor), Kill (an existing message and free its buffer space), Retrieve (an existing message from the buffer and display it on the PET screen), Summarize (the messages in the buffer, displaying the length and first line of each).

The Mode command allows the user to specify a definite time of transmission for a message (like 1115 PM), immediate transmission, or Query mode (PAN will hold the message until the intended user calls and provides a password). Any terminal equipped with a Bell 103 compatible modem can be used to transmit a message to a PAN, or to receive messages entered in Query mode.

The PAN program requires a TNW488/103 telephone modem (and DAA) and a PET with at least 8K memory (16K provides a more workable message buffer). An Apple version of PAN using the DC Hayes modem is also under development, so you will be able to exchange messages with Apple users, too.

PAN is being distributed by People's Computer Company, the parent organization of PCNET. Write to them directly at: People's Computer, 1263 El Camino Real, Box E, Menlo Park CA 94025.

SWAP PROGRAMS IN YOUR PET!

SWAP is a system utility program that allows several BASIC programs to reside in a PET's memory at the same time. This allows you to run multiple programs without having to load from tape between executions.

After LOADING and RUNNING SWAP, the user enters the number of separate program areas to be created and allocates the memory available to these areas in 256 byte blocks. Following this initialization, the user can activate the *i*th program by executing the command "?USR(*i*)". The LOAD command is used to load a program into the currently active area, and RUN runs the program in the active area. Thus, the user can load a program into each area, and then later run the programs one after another.

Program swapping is actually performed by a machine language program that resides in the PET's second cassette buffer. This places limitations on the use of machine language programs with SWAP; for example, SWAP itself preempts the USR function. In addition, the process clears variable storage, so that programs in different areas can not be linked, and a program, once swapped out and then back in, can only be reRUN, not CONTINUED.

SWAP cassette and documentation is priced at \$14.95.

FROM...

TNW Corporation
3351 Hancock Street
San Diego CA 92110
(714) 225-1040



TNW-232D SERIAL INTERFACE

A SERIAL INTERFACE MODULE...

The TNW-232D Serial Interface Module lets you connect your Commodore PET (or other IEEE 488 bus computer) to RS-232 serial devices. This means you can interface to printers, modems, CRT terminals, plotters, paper tape readers and punches — even other computers. The TNW-232D is an enhanced version of our original TNW488/232, and is fully upward compatible with our single channel TNW-2000.

USING THE RS-232 STANDARD...

EIA Standard RS-232-C is a very widely used convention for the interconnection of computers and peripheral devices of all sorts. It supports serial (one bit at a time) transmission of digital information over short distances at bit rates of up to about 20 kbps. The TNW-232D gives your computer two independent bidirectional asynchronous data channels, plus all the standard RS-232-C control signals (6 inputs and 6 outputs under software control). You can use one channel to interface both a keyboard and printer, and the other to interface a full duplex modem to your computer. Alternatively, the two channels can serve together as the primary and secondary data channels for a more complex modem. An attached RS-232 device can "throttle" data output from the TNW-232D by lowering the CTS control signal, thus simplifying software requirements.

WITH STRAP SELECTABLE CAPABILITIES...

DIP switches on the circuit board select options independently for the TNW-232D's two serial data channels: baud rate (37.5, 75, 110, 134.5, 150, 300, 600, 1200, 2400, 4800, or 9600 bits per second), character size (5, 6, 7, or 8 data bits), parity (odd, even, or mark), number of stop bits (1, 1.5, or 2), and automatic PET/ASCII data conversion (enabled or disabled). The TNW-232D can both transmit and receive BREAK characters.

AND A REAL IEEE 488 BUS INTERFACE...

The TNW-232D includes a real IEEE Standard Digital Interface for Programmable Instrumentation (IEEE 488-1975), implementing IEEE 488 capabilities SH1, AH1, T2, L2, and Interface Clear. Other devices can be used on the bus with the TNW-232D, and it can be used with other IEEE 488 capable computers as well as the Commodore Pet. Two 24 pin edge connectors are provided, to allow "daisy chaining" of devices on the IEEE bus. These connectors have the same pin assignment as the ribbon connector specified by the IEEE Standard, and match the one on the PET. The TNW-232D uses four Listen and four Talk Addresses on the IEEE bus (switch selectable).

IMPLEMENTED ON A SINGLE BOARD.

The TNW-232D is implemented as a single 9" by 13" double sided circuit board. Parallel/serial conversion and error detection are performed by LSI UART (Universal Asynchronous Receiver/Transmitter) chips. The IEEE 488 interface is implemented with Low power Schottky (LS) TTL SSI/MSI. Power supplies for +5, +12, and -12 VDC are provided on the card so ordinary 115/230V, 50/60Hz AC power is all that is required (power cord included).

PRODUCT...

TNW-232D DUAL PORT SERIAL INTERFACE MODULE: Assembled and tested circuit board with 90 day warranty, in attractive gold-anodized aluminum case with quality wood end-pieces, and accompanied by a 1 meter cable to connect the TNW-232D to the IEEE port of the Commodore PET and a comprehensive 50 page user's manual: \$369

AND OPTIONS...

TNW/IEEE CABLE: 1 meter long cable with PET style connector on one end and IEEE Standard ribbon connector on the other, to connect the TNW-232D to other IEEE 488 bus capable computers \$50

TNW to RS-232 CABLE: Because some RS-232 devices connect to an EIA male connector and others to a female, and because different devices use different subsets of the available control signals in different ways, there is no one standard TNW-232 cable configuration. The user's manual discusses this matter in detail. TNW offers the following cables, which may require some modification for your application:

TNW/232MM	(provides 2 male RS-232 connectors)	— \$25
TNW/232MF	(provides 1 male, 1 female connector)	— \$25
TNW/232FF	(provides 2 female connectors)	— \$25

FROM...

TNW Corporation
3351 Hancock Street
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USE YOUR PET AS A TERMINAL!



TNW 488/103 LOW SPEED MODEM

A TELEPHONE MODEM...

A modem is a device that allows your computer to "converse" with other computers over the telephone. With the TNW488/103 modem, you can use your PET as a terminal on another computer system, play two-computer games, or exchange data files or software with other computers over the telephone.

USING THE STANDARD LOW SPEED MODEM CONVENTION...

The TNW488/103 is a Frequency Shift Keyed (FSK) modem compatible with the Bell 103 modem (and therefore with practically every other low speed telephone modem in the USA). Low speed means up to 600 bits per second, but most systems run at 300 or 110 bits per second. The TNW488/103 will work satisfactorily over even poor quality telephone lines.

ELECTRICALLY CONNECTED TO THE TELEPHONE SYSTEM...

The TNW488/103 connects directly to the telephone network via a separate Data Access Arrangement, or "DAA" (not an acoustical coupler). This means that your computer can dial the telephone for you, and answer when other computers call. You can purchase a CBT or CBS type DAA (see "Options" at right for TNW's offering), or rent one from the telephone company for about \$6 per month.

WITH SOFTWARE SELECTABLE CAPABILITIES...

Your computer program tells the TNW488/103 to pulse-dial or answer the telephone, and selects the baud rate (75, 110, 150, 300 or 600 bits per second), character size (5, 6, 7, or 8 data bits), parity (odd, even, or mark), and number of stop bits (1, 1.5, or 2) to use for each telephone "conversation". Other features include space *disconnect* (long or short), *transmit break*, *error detection* (parity, overrun, and framing), *status byte* (including busy/ring detection), and *SRQ enable* (to indicate telephone ring, data character received, and/or ready to accept a character for transmission).

AND A REAL IEEE 488 BUS INTERFACE...

The TNW488/103 includes a real IEEE Standard Digital Interface for Programmable Instrumentation (IEEE 488-1975) capability, implementing IEEE capabilities SH1, AH1, T2, L2, SR1, and Selective Device Clear. Other devices can be used on the bus with the TNW488/103 connected, and it can be used with other IEEE capable computers as well as the Commodore PET. A non-IEEE-Standard 24 pin edge connector is provided (to match the Commodore PET), with the same pin assignments as on the ribbon connector specified by the IEEE Standard. The TNW488/103 uses two Listen and two Talk Addresses on the IEEE bus (switch selectable).

IMPLEMENTED ON A SINGLE BOARD.

The TNW488/103 is implemented as a single 9" by 13" double-sided circuit board. Motorola's MC6860 modem chip provides digital modulation and demodulation (no alignment), an adjustable transmit level, and a receive sensitivity of -42 dBm. The IEEE 488 interface is implemented in Low power Schottky (LS) TTL SSI/MSI. Because power supplies for +5, +12, and -12 VDC are provided on the card, ordinary 115V, 60 Hz power is all that is required (power cord included).

PRODUCT...

TNW488/103 LOW SPEED MODEM MODULE: Assembled and tested circuit board with 90 day warranty, in attractive gold-anodized aluminum case with quality wood end pieces, and accompanied by a 1 meter cable to connect the TNW488/103 to the IEEE port of the Commodore PET, a comprehensive 50 page users manual, and software required to connect your PET into a full duplex ASCII terminal: \$389

AND OPTIONS...

D-101 DAA: DARCOM D-101 data coupler to connect the TNW488/103 to the telephone line (complies with protection, signal level, billing and other requirements of the Federal Communications Commission Rules and Regulations, part 68). Includes modular plug (USOC-RJ11C) to connect to matching (telephone company supplied) modular jack, and five foot cable to connect to the TNW488/103. \$159

TNW/IEEE CABLE: 1-meter long with PET style connector on one end and an IEEE Standard ribbon connector on the other, to connect the TNW488/103 to other IEEE 488 bus capable computers. \$50

FROM...

TNW Corporation
3351 Hancock Street
San Diego, CA 92110
(714) 225-1040

NEW! INEXPENSIVE! EASY TO USE!



TNW-2000 SERIAL INTERFACE

A SERIAL INTERFACE MODULE...

The TNW-2000 Serial Interface Module lets you connect your Commodore PET (or other IEEE 488 bus computer) to RS-232 serial devices. This means you can interface to printers, modems, CRT terminals, plotters, paper tape readers and punches — even other computers.

USING THE RS-232 STANDARD...

EIA Standard RS-232-C is a very widely used convention for the interconnection of computers and peripheral devices of all sorts. It supports serial (one bit at a time) transmission of digital information over short distances at bit rates of up to about 20 kbps. In RS-232 terminology, the TNW-2000 is configured as a Data Communications Equipment (DCE), and the unit provides a female RS-232 (EIA) connector for your device to connect to. Inputs to the TNW-2000 are pins 2 (Transmitted Data), 4 (Request to Send), and 20 (Data Terminal Ready). Outputs from the TNW-2000 are pins 3 (Received Data), 5 (Clear to Send), 6 (Data Set Ready), and 8 (Received Line Signal Indicator). Pins 1 (Protective Ground) and 7 (Signal Ground) are also used.

EASY TO USE...

On input, if no data has been received, the TNW-2000 immediately returns a null character (ASCII NUL, value zero) to a GET# command (Commodore PET) or RBYTE command (Tektronix 4051). On output, the TNW-2000 waits for the RS-232 Request to Send signal to become true before sending data, in order to allow printing at the highest speed your printer can support, without software overhead. When desired, the TNW-2000 provides automatic ASCII/PET conversion for input, PET/ASCII conversion for output.

WITH SELECTABLE CAPABILITIES...

The TNW-2000 baud rate is adjustable over the range of 110 to 9600 bits per second. Switches select IEEE bus address and data word length (8 bit words without parity or 7 bit words with parity), specify even or odd parity (for 7 bit word length), and enable or disable the PET/ASCII data conversion feature.

AND A REAL IEEE 488 BUS INTERFACE...

The TNW-2000 includes a real IEEE Standard Digital Interface for Programmable Instrumentation (IEEE 488-1975), implementing IEEE 488 capabilities SH1, AH1, T2 and L2. Other devices can be used on the bus with the TNW-2000 and it can be used with other IEEE 488 capable computers as well as the Commodore Pet. The IEEE bus connection includes a 1 meter cable and provides a daisy chaining capability with either the PET style edgeboard connector or the IEEE 488 Standard ribbon connector.

IMPLEMENTED ON A SINGLE BOARD.

The TNW-2000 is implemented as a double sided circuit board. Parallel/serial conversion is performed by an LSI UART (Universal Asynchronous Receiver/Transmitter) chip. The IEEE 488 interface is implemented with Low power Schottky (LS) TTL SSI/MSI. Power supplies for +5 and -12 VDC are provided on the card so ordinary 115 V or 230 V (switch selectable) 50/60 Hz power is all that is required (power cord included).

PRODUCT...

COMPLETE TNW-2000 SERIAL INTERFACE: Fully assembled and tested, with attractive cabinet, cable to connect the unit to either IEEE Standard or Commodore PET connector, and full documentation: \$229

AND OPTIONS...

While many devices (such as the LA36 DECwriter and the Xerox 1620 printer) include a cable that connects directly to the TNW-2000, some other devices may require an additional cable.

TNW-2000MF CABLE: 2 meter cable with male EIA connector on one end, female on the other, with pins 1-8, 20 wired "straight through": \$20

TNW-2000MM CABLE: 2 meter cable with male EIA connectors on both ends, in order to interface to a device configured as a Data Communications Equipment (DCE). Pins 1 and 7 are wired straight through: pins 2/3, 4/5, and 6/20 are crossed: \$20

A FINAL OPTION: Some applications are best handled using TNW's OTHER serial interface, the TNW-232D. You should consider the 232D if your application requires the flexibility of software-controllable RS-232 control signals, a baud rate outside the TNW-2000's range, a 5 or 6 bit word length, or error detection capability, or if you have multiple RS-232 devices to interface.

FROM...

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Requested (verso) creative computing

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